9

CLAIMS

1.   A method for detecting and monitoring wafer probe stability including the steps of:

probing each die on a wafer;

for each die determining whether the result of the probe is a pass or a fail;

if the result of a probe is a fail, re-probing the die and determining whether the re-probe is a pass or a fail;

once all the dies have been probed determining the rate of die re-probes that lead to passes;

comparing the rate of passes on re-probes to a pre-determined limit; and

if the rate of passes on re-probes is greater than the predetermined limit, assigning the probe status as unstable.

2.   A method for detecting and monitoring wafer probe stability as claimed in claim 1 wherein the step of assigning the probe status as unstable includes setting a flag on the monitoring device.

3.   A method for detecting and monitoring wafer probe stability as claimed in claim 2 wherein the step of assigning the probe status to unstable further includes sounding an alarm and/or providing an indicator on a monitor.

4.   A method for detecting and monitoring wafer probe stability as claimed in claim 2 or claim 3 wherein the step of assigning the probe status to unstable further includes disabling the probe equipment.

5.   A method for detecting and monitoring wafer probe stability as claimed in any one of claims 1 to 4 wherein the step of re-probing any die that fails on the first probe is preformed a predetermined number of times.

6.   A method for detecting and monitoring wafer probe stability as claimed in claim 5 wherein re-probing is preformed only once for each die that fails on the first probe.

7.   A method for detecting and monitoring wafer probe stability as claimed in claim 5 wherein the step of re-probing may be performed more than once.

8.   A method for detecting and monitoring wafer probe stability as claimed in any one of claims 1 to 7 further including the step of creating a probe reference file for each wafer.

9.   A method for detecting and monitoring wafer probe stability as claimed in claim 8 wherein the probe reference file contains a re-probe limit, re-probe recovery rate information, a bin re-probe limit, a sensitivity limit and the recovery rate for re-probing.

10.   A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the re-probe recovery rate information includes a limit value.

11.   A method for detecting and monitoring wafer probe stability as claimed in claim 10 wherein for wafers with more than a few hundred dice the limit is 2%.

12.   A method for detecting and monitoring wafer probe stability as claimed in claim 10 wherein the re-probe rate recovery limit is set as three times the standard deviation of the re-probe recovery rate from previously supplied data.

13.   A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the sensitivity limit includes data on the number of sensitive dies expected in a wafer.

14.   A method for detecting and monitoring wafer probe stability as claimed in claim 9 wherein the recovery rate for re-probing is determined as:

(number of recover from fail to good – recovery from sensitivity limit to good)
(total number of tested good die)

11

15.   A method for detecting and monitoring wafer probe stability as claimed in any one of claims 1 to 14 wherein the method further includes the step of generating a report from the probe reference file for each completed wafer test.

5   16.   A method for detecting and monitoring wafer probe stability as claimed in claim 15 wherein the report includes device identification information and fail to good probe information.

17.   A system for detecting and monitoring wafer probe stability including the
10   system arranged to:

         probe each die on a wafer;

         for each die determine whether the result of the probe is a pass or a fail;

         if the result of a probe is a fail, re-probe the die and determine whether the re-probe is a pass or a fail;

15   once all the dies have been probed determine the rate of die re-probes that lead to passes;

         compare the rate of passes on re-probes to a pre-determined limit; and

         if the rate of passes on re-probes is greater than the predetermined limit, assign the probe status as unstable.

20